housed it would have resumed good growth exactly as had occurred in the case of B. The failure to remove this individual from the enclosure of B had the same effect as one would expect in nature as a result of an individual not being able to locate a vacant territory.

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17. THE EXTINCTION OF THE GHARIAL [*GAVIALIS GANGETICUS* (GMELIN)] FROM THE BRAHMANI AND BAITARANI RIVERS OF ORISSA

The gharial formerly inhabited all three major river systems of Orissa (Singh and Bustard, in press). Critically-endangered population remnants still inhabit the Mahanadi river (Bustard and Singh, in prepn.) where a special sanctuary has been created and an extensive gharial conservation programme is in operation (FAO 1974, Bustard 1975, FAO 1975, Bustard 1976). However, the species is now considered to be extinct in both the Brahmani and Baitarani river systems.

Details of these extinctions are set out below :

BRAHMANI RIVER

Until about 10-15 years ago gharial occurred in the Brahmani river at Bonaigarh, Talcher, Kamakshyanagar and also in the lower Brahmani. The Raja of Sundargarh killed a male gharial about 22 ft. (6.6 m) in length in the Brahmani near Bonai in 1967. The informant further indicated that since 1970 there are no further reports concerning the occurrence of gharial in the Brahmani river. There is a village near Talcher called Katarapada where the river is called Kumbhirakhai (=crocodile eating place in Oriya) because a large number of gharial occurred in this area until twenty years ago. A dam is being constructed about 20 miles upstream from Talcher. It is reported that when the site for the construction of the dam was selected and extensive dynamiting took place in the area, many gharial were killed.

A person from outside of Orissa killed a gharial in the Brahmani in 1975. This was probably the last surviving Brahmani gharial.

Two tributaries of the Brahmani formerly holding gharial were the rivers Kharasuan and Ramiyala. Many gharial formerly inhabited the Sundarmundi Gorge of the Ramiyala river. The practice of dynamiting for fish is reported to have killed many gharial. The last definite report from Ramiyala was during 1958 when two gharial were killed by this fishing practice.

Baitarani River

Gharial were formerly present in the lower Baitarani and near Anandpur and Jajpur areas (Singh and Bustard, in press). However, there are no reports for the last 10-20 years and we consider that the gharial is now definitely extinct in the Baitarani river.

Sileru River

The Sileru river joins the Godavari which flows into Andhra Pradesh. There are reports of the occurrence of gharial in the Sileru up to 1971. We feel that the gharial is now extinct in the Sileru.

Discussion

The above account documents how rapidly the gharial has been lost from most of its former habitat in Orissa, a process which has been repeated throughout most of the gharial's former range. We cannot pinpoint the precise time when the gharial became extinct in the Baitarani but consider that this occurred during the 1960's. For the Sileru it was in the early 1970's (last report 1971) and for the Brahmani it was as recent as 1975.

The significant point is that the rapid disappearance of these entire populations occurred without the knowledge of responsible people at the time. This is exactly how an entire species can be lost, and the extinction of the Indian Cheetah provides a graphic example. A species becomes rare, it is seldom sighted, and amid apathy, or lack of clear understanding of what requires to be done, may entirely disappear.

The Indian Gharial is a species which has been saved from the brink. We feel certain that the Mahanadi gharial population would already have gone the way of those of the Baitarani, Sileru and Brahmani, and hence the gharial would have become extinct in Orissa, and in due course throughout India, had it not been for the concern of the Government of India for the species leading to an investigation into its status and conservation requirements (FAO 1974). Following submission of this report to Government of India, extremely rapid conservation action to save the gharial was initiated by the Government of India, in association with the States, under technical assistance from FAO/UNDP (FAO, 1975). This work is continuing.

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18. A TAXONOMIC NOTE ON MUGGER SUBSPECIES (*CROCODYLUS PALUSTRIS*)

In Deraniyagala's (1936) description of the Sri Lankan subspecies of *Crocodylus palustris* (*C. p. kimbula*) he listed several features which, in his opinion, distinguished it from Indian *C. palustris*.

While examining data collected by C. A. Ross in 1974 on scalation of *C. palustris* specimens from several parts of India and our own captive stock of 1000 at Madras Crocodile Bank we found that the characters given as points of sub-specific differentiation between the Indian and Sri Lankan races of *C. palustris* are invalid. The small size of the sample of Indian specimens Deraniyagala looked at is probably to blame. Of the four characters given by Deraniyagala the only one which is presently a point of distinction is the tendency of some populations of Sri Lankan mugger to frequent saltwater (Whitaker 1979). However mugger were once common in the salt pans of Sind (McCann 1935) so even this feature is not unique to the Sri Lankan mugger. The assertion that the Sri Lankan mugger is more frequently known as a maneater than its northern counterpart could be due to confusion with the often sympatric *Crocodylus porosus*.

Taken one by one, the following are the characters given for *C.p. kimbula* by Deraniyagala, each one followed by our findings with mugger from Tamil Nadu, Karnataka and Uttar Pradesh.

(*a*) Sri Lankan mugger has more transverse dorsal rows with six contiguous scutes than with four while seven is not uncommon and occasionally a row with eight.

(*aa*) In our sample of sixteen (Table 1), twelve specimens had more transverse rows with six than four, three had rows with seven and two with eight.

TABLE 1

DORSAL SCALE ROWS OF INDIAN *Crocodylus palustris*

	4 scuted rows	5 scuted rows	6 scuted rows	7 scuted rows	8 scuted rows
Mettur Dam ..	9	4	6	..	..
,, ..	9	2	7	..	..
,, ..	7	1	8	..	2
,, ..	7	1	10	..	..
Malabar ..	10	5	3	..	..
Ranganthittoo ..	8	1	10	..	..
,, ..	7	3	8	..	..
,, ..	9	3	4	..	..
,, ..	7	2	9	..	..
,, ..	7	1	10	..	..
,, ..	7	2	8	..	1
,, ..	7	1	8	2	..
,, ..	7	1	8	2	..
,, ..	6	1	10	1	..
,, ..	7	2	8	..	..
Uttar Pradesh ..	3	4	6	..	..